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(58) Field of search
UK CL (Edition K) B8P PG2 PK10
INT CL⁵ B65D

(54) **Packaging for medicine**

(57) Liquid medicine is contained in packaging which comprises a plurality of compartments 3, each of which contains a single dose of the medicine and closure means 4 for sealing each compartment, the closure means 4 being openable so that the dose in each compartment may be administered independently.

Such packaging may be used in combination with an applicator comprising a conduit 13 which, in use, is inserted into the patient's mouth, and which is fastenable to the compartment 3, and means 20 for rupturing the closure means 4 to allow medicine to flow along the conduit.

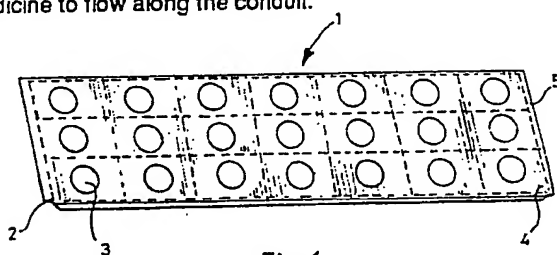


Fig. 1

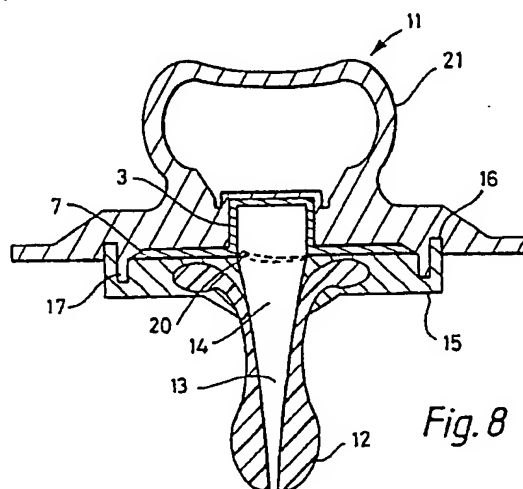


Fig. 8

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1990.

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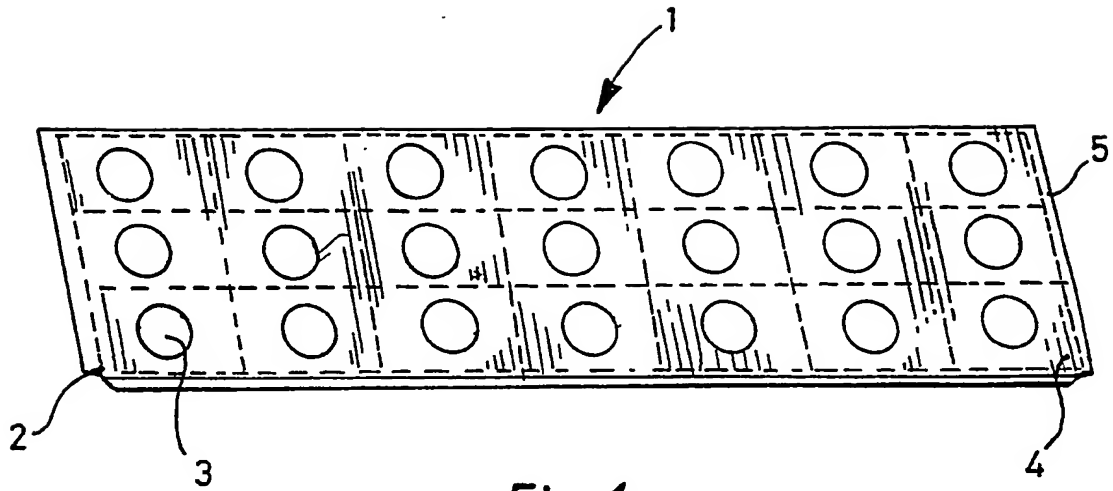


Fig. 1

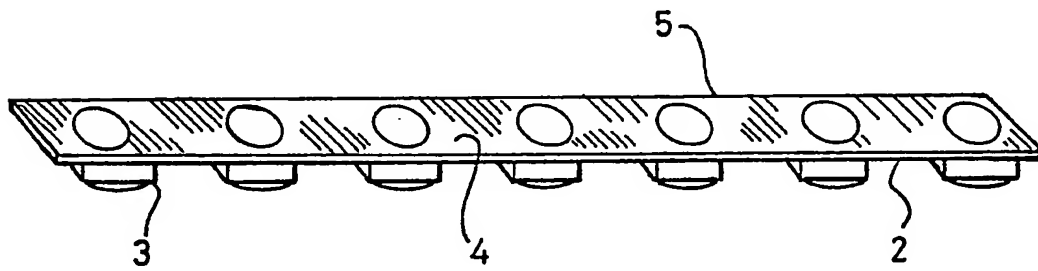


Fig. 2

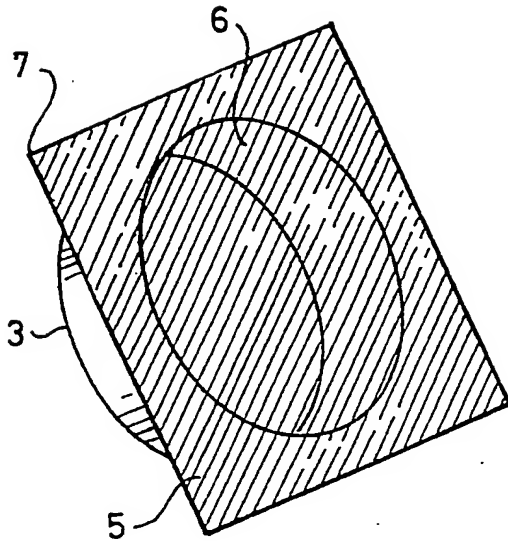


Fig. 3

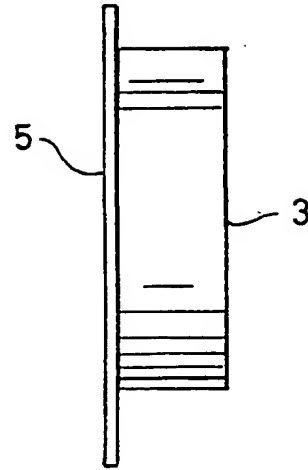


Fig. 4

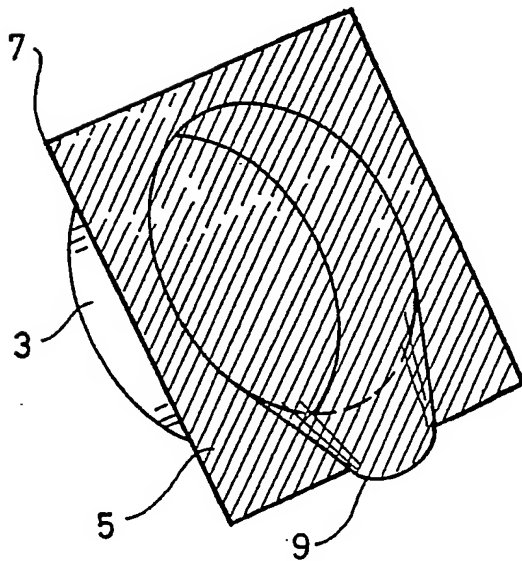


Fig. 5

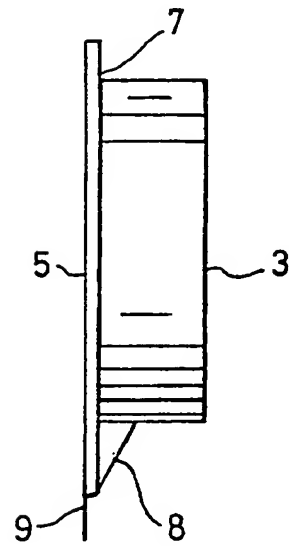
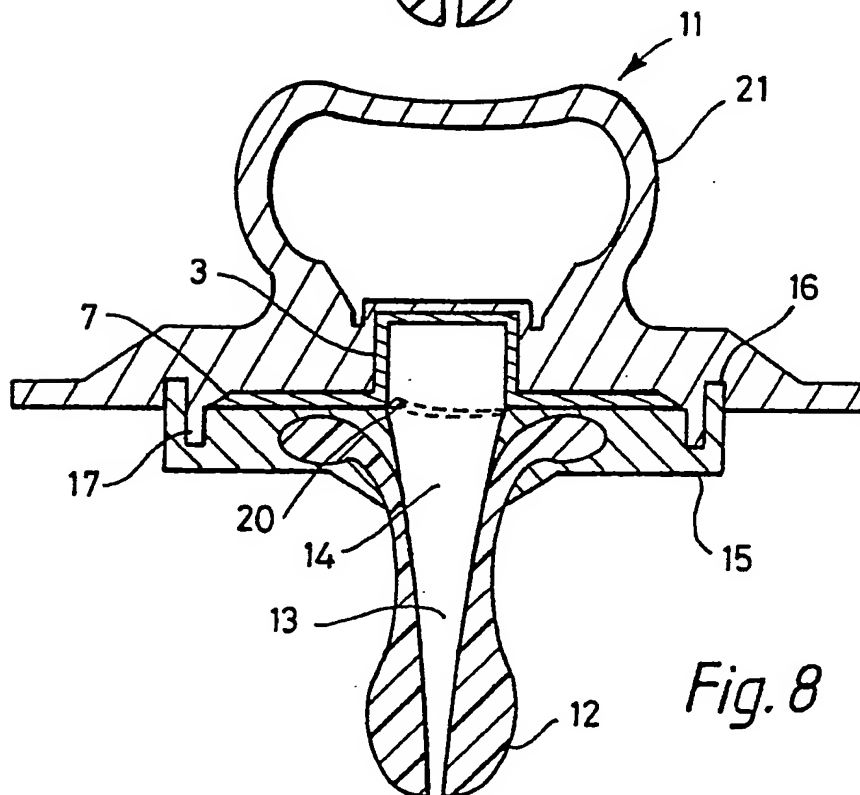
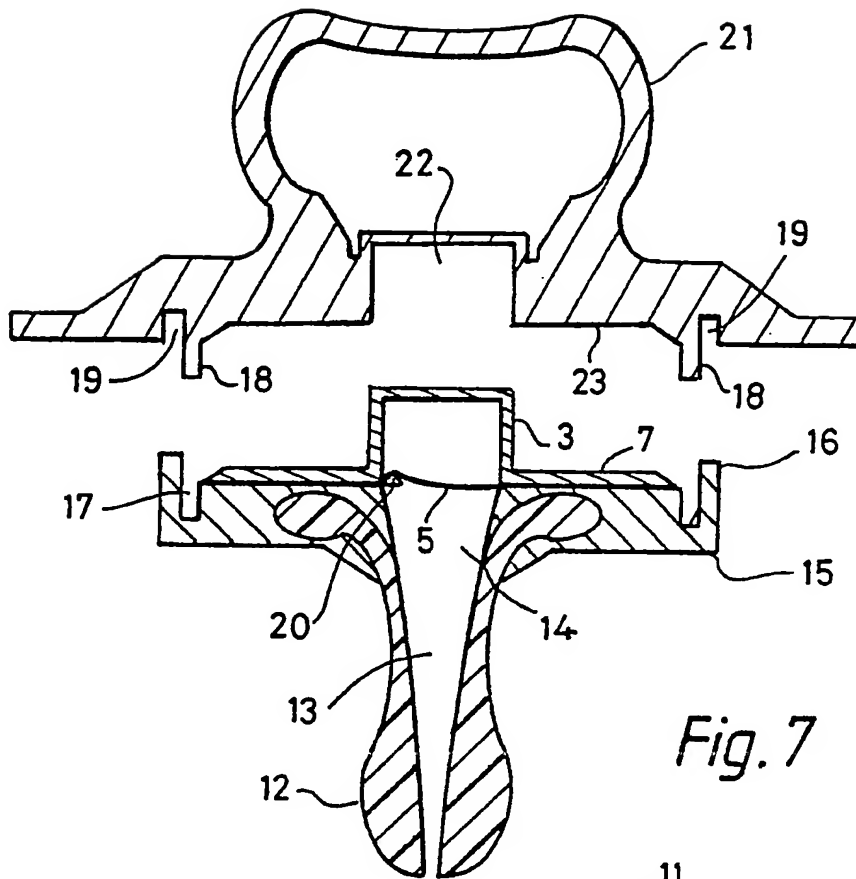


Fig. 6



- 1 -

Title: Packaging for Medicine

Field of the Invention

The invention relates to packaging for liquid medicine, and to a method of dispensing liquid medicine. The invention is particularly, but not exclusively, concerned with medicine to be administered orally. The invention also relates to an applicator for liquid medicine.

Background to the Invention

Liquid medicine which is to be taken orally is conventionally contained in a bottle which, when full, holds a large number of doses. When the medicine is to be administered, a dose is measured by filling a receptacle such as a teaspoon or a measuring cup to a given level. However, since a variety of different sizes of receptacle may be used, and the filling of the receptacle to the desired level is prone to human error, the measurement of a given dose tends to be inaccurate resulting in the incorrect amount of medicine being administered.

Furthermore, it is rarely possible to ascertain, on inspection of the bottle, whether a particular dose has been administered. Thus, a patient who does not have the benefit of any separate record of previously administered doses may well forget to take a due dose of medicine, or may take an additional dose on the erroneous assumption that the due dose had not been taken.

Background to the Invention

According to the invention, in one aspect, there is provided packaging containing a liquid medicine which packaging comprises a plurality of compartments, each of which contains a single dose of the medicine and closure means for sealing each compartment, the closure means being openable so that the dose in each compartment may be administered independently of the doses in the other compartments, whereby the medicine is provided as a plurality of individually encapsulated doses.

Preferably, the packaging is in the form of a "flat-pack" in which the compartments are formed in a tray, which may with advantage have frangible portions between adjacent capsules, the arrangement being such that a given capsule at the edge region of the tray may be readily detached from the rest of the pack.

Since the capacity of each compartment and the level to which it is filled may be determined during manufacture and packaging, it is possible to ensure that each dose that is presented to the patient has already been precisely measured. Furthermore, the number of compartments remaining may be used to provide a visual indication of the number of doses previously taken, which can be used to determine whether a further dose is required.

Each compartment preferably incorporates a lip which facilitates pouring of the medicine directly into the patient's mouth.

The closure means for each compartment may with advantage comprise a sheet of flexible material, such as metal foil, which fits over an aperture in the compartment, and which may be peeled away to allow access to the dose of medicine contained therein.

Where the compartments are formed in a tray, the closure means preferably comprises a single sheet which fits over one face of the pack.

Instead of being peeled, the sheet may be ruptured to allow a dose of the medicine to be dispensed.

It is thus also within the scope of the present invention to provide an applicator for an individually encapsulated dose of medicine as hereinbefore described, the applicator comprising a conduit which, in use, is inserted into the patient's mouth, and which is fastenable to the compartment, and means for rupturing the closure means associated with that compartment, the arrangement being such that, with the closure means ruptured, the medicine is able to flow along the conduit.

Where the medicine is to be given to babies or young children, the applicator is preferably in the form of a baby's dummy, having a teat in which the conduit is situated.

It is believed that, since a baby is familiar with a dummy, this applicator facilitates the administering of medicine which the baby would otherwise be reluctant to take.

In this case, the fastening means may comprise a first

screw-threaded connector attached to the teat and a second screw-threaded connector preferably formed integrally with the dummy handle, the arrangement being such that the compartment is, in use, sandwiched between the two connectors.

The first connector may include a projection so arranged so as to rupture the closure sheet associated with the compartment as the two connectors are screwed together.

In another aspect, the invention provides a method of dispensing a liquid medicine by encapsulating individual doses of the medicine in packaging having a plurality of compartments each of which contains a respective dose of medicine.

Brief Description of the Drawings

The invention will now be described, by way of example only, with reference to the accompanying drawings in which:

Figure 1 shows a "flat-pack" of a plurality of individually encapsulated doses of liquid medicine in accordance with the invention;

Figure 2 shows part of the "flat-pack" of Figure 1 from a slightly different angle;

Figures 3 and 4 show, respectively in perspective and from one side, a compartment forming part of the packaging of Figures 1 and 2;

Figures 5 and 6 are corresponding views to Figures 3 and

4, of a modified form of compartment;

Figure 7 is a partially exploded sectional side view of an applicator according to another aspect of the invention; and

Figure 8 is a corresponding view of the applicator when assembled.

Detailed Description

Referring to Figures 1 and 2, a flat-pack of liquid medicine 1 comprises a tray 2 of a suitable plastics material in which there is formed an array of compartments, each being in the form of a cylindrical capsule 3.

Each capsule 3 contains a dose of liquid medicine, and the capsules 3 are sealed by means of a foil sheet 4 sealed onto the face of the tray 2. The tray 2 includes a grid of perforations 5 which make the former frangible in the regions between adjacent capsules 3.

Thus, as is shown in Figure 2, a single row of capsules 3 may be detached from the rest of the packaging, and individual capsules 3 may then be detached from the rest of the row. In the illustrated example, the liquid medicine is to be taken at a rate of one dose per day, so each row of capsules 3 corresponds to one week's supply of medicine.

Referring to Figures 3 and 4, each capsule 3 has an open end 6 which, with the capsule 3 detached from the rest of the pack, is surrounded by a square flange 7. A portion

of the foil sheet 5, which is also detached from the rest of the pack by the action of detaching the capsule 3, is sealed against the flange 7 and covers the opening 6 so as to prevent medicine from leaving the capsule 3. When the medicine is to be administered, that portion of the foil sheet 5 may be peeled away from the flange 7, enabling the medicine to be poured out of the capsule 3 through the opening 6.

In Figures 5 and 6, the capsule 3 has been modified by the addition of a lip 8 which, in use, facilitates pouring of a medicine from the capsule 3 into the patient's mouth. In addition, the portion of the foil 5 associated with the capsule 3 includes a tab 9 which facilitates peeling of the foil 5 from the flange 7. Where each capsule 3 includes a tab 9, the flat-pack 1 consists of a maximum of 2 rows of capsules 3, with the tabs extending beyond the opposite elongate edges of the pack 1.

The version of the capsule 3 shown in Figures 3 and 4 may be used in the applicator shown in Figures 7 and 8 which is in the form of a baby's dummy 11.

The dummy 11 comprises a teat 12 in which there is formed a conduit 13.

The teat 12 is attached at its base region 14 to a first connector 15 having a screw-threaded, upstanding annular peripheral wall 16 and a sharpened protruberance 20. The connector 15 also includes an annular, screw-threaded channel 17 which is concentric with the wall 16.

The wall 16 and channel 17, in use, cooperate with a corresponding screw-threaded wall 18 and channel 19 in a

handle 21 of the dummy to give a screw-threaded connection between the connector 15 and the handle 21.

The handle 21 includes a central cylindrical cavity 22 adjacent which there is provided a square section recess 23, the cavity 22 and recess 23 corresponding respectively to the shape of the capsule 3 and the flange 7.

When a dose of medicine is to be administered to a child or baby, the capsule 3 is positioned on the connector 15 as shown in Figure 7, and the handle 21 is then screwed onto the latter, with the capsule 3 and flange 7 being received in the cavity 22 and recess 23 respectively. As this happens, the capsule 3 is forced onto the protruberance 20 which consequently ruptures the foil 5, allowing the medicine to pour out of the capsule 3, along the conduit 13 and into the mouth of a child or baby sucking the teat 12. As the capsule 3 becomes sandwiched between the handle 21 and connector 15, the capsule 3 and flange 7 may be rotated relative the latter, causing the protruberance 20 to tear the foil 5, thus providing a larger area through which the medicine may flow from the capsule 3.

The dummy may include air vents (not shown) so arranged as to reduce or prevent the occurrence of the partial vacuum in the capsule 3 as the medicine travels along the conduit 13, which partial vacuum may retard the progress of the medicine.

The teat 12 may be modified by altering the size of the conduit 13 depending upon the rate at which it is desired to administer the medicine.

Claims

1. Packaging containing a liquid medicine which packaging comprises a plurality of compartments, each of which contains a single dose of the medicine and closure means for sealing each compartment, the closure means being openable so that the dose in each compartment may be administered independently of the doses in the other compartments, whereby the medicine is provided as a plurality of individually encapsulated doses.
2. Packaging according to claim 1 wherein the packaging is in the form of a "flat-pack" in which the compartments are formed in a tray.
3. Packaging according to claim 2 in which the tray includes frangible portions between adjacent capsules, the arrangement being such that a given capsule at the edge region of the tray may be readily detached from the rest of the pack.
4. Packaging according to any of the preceding claims in which each compartment incorporates the lip which facilitates pouring of the medicine directly into the patient's mouth.
5. Packaging according to any of the preceding claims in which the closure means for each compartment comprises a sheet of flexible material which fits over an aperture in the compartment, and which may be peeled away to allow

access to the dose of medicine contained therein.

6. Packaging according to claim 5, when appended to claim 2, in which the closure means comprises a single sheet which fits over one face of the pack.

7. Packaging according to claim 5 or claim 6 in which the sheet may be ruptured to allow a dose of the medicine to be dispensed.

8. An applicator for an individually encapsulated dose of medicine contained in packaging according to any of the preceding claims, the applicator comprising a conduit which, in use, is inserted into the patient's mouth, and which is fastenable to the compartment, and means for rupturing the closure means associated with that compartment, the arrangement being such that, with the closure means ruptured, the medicine is able to flow along the conduit.

9. An applicator according to claim 8, in which the applicator is in the form of a baby's dummy, having a teat in which the conduit is situated.

10. An applicator according to claim 8 or claim 9 in which the fastening means comprises a first screw-threaded connector attached to the teat and a second screw-threaded connector preferably formed integrally with the dummy handle, the arrangement being such that the compartment is, in use, sandwiched between the two connectors.

11. An applicator according to claim 9 in which the first connector includes a projection so arranged as to rupture the closure sheet associated with the compartment as the

two connectors are screwed together.

12. A method of dispensing a liquid medicine by encapsulating individual doses of the medicine in packaging having a plurality of compartments each of which contains a respective dose of medicine.

13. Packaging substantially as described herein with reference to and as illustrated in Figures 1 to 6 of the accompanying drawings.

14. An applicator substantially as described herein with reference to, and as illustrated in, the accompanying drawings.

15. A method substantially as described herein with reference to the accompanying drawings.

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